APPENDIX E
NOTATION

A	Cross-sectional area, ft^2.
a	Offset for weir notch ventilation, ft.
B	Base width of channel, ft.
b_n	Length of notch, ft.
B_s	Bottom width of approach channel, ft.
C	Coefficient.
D	Depth of flow in channel, ft.
D_o	Diameter of circular culverts, ft.
D_s	Depth of scour, ft.
D_{sm}	Maximum depth of scour, ft.
D_w	Diameter of stilling well, ft.
d	Depth of uniform flow in culvert, ft.
d_c	Critical depth, ft.
d_s	Depth of approach flow, ft.
d_1	Depth of flow upstream of hydraulic jump, ft.
d_2	Theoretical depth of flow required for hydraulic jump, ft.
d_{50}	Diameter of average size stone, ft.
F	Froude number.
F_{ch}	Froude number of flow in channel, $F_{ch} = Q/\sqrt{gA^3/T}$.
g	Acceleration due to gravity, $ft.sec^2$.
H	Head, depth of recessed apron and height of end sill, ft. Also, horizontal.
h	Height of fall or drop in structure, ft.
h_1	Height of longitudinal sill, ft.
h_t	Height of transverse end sill, ft.
h'	Height of end sill.
L	Gross perimeter of grate opening, length of flared outlet transition, length of apron, length of basin, ft.
L_s	Length of scour, ft.
L_{sm}	Maximum length of scour, ft.
L_{sp}	Length of stone protection.

n	Manning's roughness coefficient.
Q	Discharge, cfs.
q	Discharge per foot of width, cfs/ft.
S	Slope of channel bottom for partial pipe flow and slope of energy gradient for full pipe flow.
T	Depth of stilling well below invert of incoming pipe, ft.
TW	Tailwater depth above invert of culvert outlet, ft.
T	Top width of flow in channel, ft.
T_s	Thickness of sack revetment
T_B	Thickness of cellular blocks
t	Thickness of breast wall at notch, in. and duration of flow, min.
V, $\bar{v}$	Average velocity of flow, ft/sec. Also, vertical.
V_s	Volume of scour, ft^3.
W	Length of weir, width of flume, ft.
W_s	Width of scour from centerline of single circular or square outlet, ft.
W_{sm}	One-half maximum width of scour from centerline of single circular or square outlet, ft.
W_{smr}	One-half maximum width of scour from centerline of single rectangular outlet, ft.